

REMARKS

Applicant requests favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

Claims 1-4 and 6-15 are presented for consideration. Claim 1 is the sole independent claim. Claim 15 has been amended to attend to a formal matter. No new matter has been added.

Applicant requests favorable reconsideration and withdrawal of the rejections set forth in the above-noted Office Action.

Claims 1-6 and 11-15 were rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,789,734 (Torigoe et al.) in view of European Patent Application 0 820 132 (Ohmi et al.). (Applicant understands that Claim 5, which was canceled in the Amendment filed on April 8, 2003, was inadvertently included in this rejection.) Claims 7 and 8 were rejected under 35 U.S.C. § 103 as being unpatentable over the Torigoe et al. patent in view of U.S. Patent No. 6,256,087 (Bader). Claims 9 and 10 were rejected under 35 U.S.C. § 103 as being unpatentable over the Torigoe et al. patent in view of U.S. Patent No. 5,552,892 (Nagayama).

Applicant submits that the cited art, whether taken individually or in combination, does not teach many features of the present invention as recited in independent claim 1. Therefore these rejections are respectfully traversed.

Independent claim 1 recites an exposure apparatus that includes an illumination optical system for illuminating a pattern of a reticle with laser light outputted from a continuous emission laser, a projection optical system for projecting the illuminated pattern onto a subject to

be exposed and an interferometer, of a Fizeau type, being operable while using laser light outputted from the continuous emission laser.

The Torigoe et al. patent relates to an exposure apparatus that compensates for spherical aberration of an image-forming device. In the Amendment filed on April 8, 2003, Applicant stated “The Torigoe et al. patent shows the use of an interferometer such as a Twyman-Green type for measuring spherical aberration of a projection optical system. That patent also refers to the use of a common light source for an exposure apparatus and the interferometer.” However, Applicant has now recognized that those statements in that Amendment were not correct. Specifically, Applicant submits that the Torigoe et al. patent does not teach the use of an interferometer.

In the Office Action (pages 2 and 3), the Examiner cites the Torigoe et al. patent as teaching an interferometer that “includes a reflection member (reference flat 81) disposed on a stage (X-Y-Z stage 34) for holding the subject, and forms an interference fringe for measurement of the wavefront aberration (spherical aberration) of the projection optical system (see abstract). The apparatus shown further includes a photoelectric converter (light receiving elements 72 and 75), and an operation unit (spherical aberration measurement control 61).”

However, Applicant submits that the Torigoe et al. patent teaches only a system for measuring spherical aberration, not an interferometer. Specifically, as shown in Fig. 1 and discussed in col. 6, lines 19-46, the Torigoe et al. patent teaches that light from an illumination optical system 1 is divided by a beam splitter 67 into two light beams. One of the two light beams is directed to a light receiving element 75. The other light beam passes through projection

optical system 31 and is then reflected by reference flat 81. The reflected light beam returns to the beam splitter, whence it is directed to another light receiving element 72.

It is clear from the above-described structure and operation that the two light beams divided by the beam splitter do not interfere with each other at all. Rather, they are simply directed to two different light receiving elements.

Accordingly, the system for measuring spherical aberration taught by the Torigoe et al. patent is not based on interference and is not an interferometer. Rather, according to that patent, the amount of spherical aberration of the projection optical system is determined mainly on the basis of the quantity of reflected light as measured by the light receiving element 72 (see col. 6, lines 35-37 and 44-46). However, if the output of the illumination optical system fluctuates greatly or changes greatly with time, then a result of dividing an output signal of the light receiving element 72 by an output signal of the light receiving element 75 may be used as a spherical aberration measurement output (see col. 6, lines 40-44).

For at least the reasons given above, Applicant submits that nothing in the Torigoe et al. patent would teach or suggest at least an exposure apparatus comprising an interferometer, of a Fizeau type, being operable while using laser light outputted from a continuous emission laser, as is recited in independent claim 1.

The Ohmi et al. patent relates to an excimer laser oscillation apparatus and method, an excimer laser exposure apparatus, and a laser tube. The Office Action (page 3) cites that patent as teaching a continuous emission excimer laser. However, even if the Ohmi et al. patent be deemed to teach a continuous emission excimer laser, Applicant understands that nothing in that

reference would teach or suggest an interferometer. Applicant submits that nothing in the Ohmi et al. patent would teach or suggest at least an exposure apparatus comprising an interferometer, of a Fizeau type, being operable while using laser light outputted from a continuous emission laser, as is recited in independent claim 1.

Applicant further submits that the remaining art cited does not cure the deficiencies noted above with respect to the Torigoe et al. and Ohmi et al. patents. The Examiner relies on the Bader patent for showing the use of a semi-transparent mirror to guide light from an illumination system of an exposure apparatus away from the exposure function, and the Nagayama patent for showing the use of an actuated mirror to guide light from an illumination system of an exposure apparatus away from the exposure function. Applicant submits, however, that neither of these patents teaches or suggests at least an exposure system comprising an interferometer, of a Fizeau type, being operable while using laser light outputted from a continuous emission laser, as recited in independent claim 1. Therefore, those patents add nothing to the teachings of the Torigoe et al. and Ohmi et al. patents that would render obvious Applicant's present invention recited in that claim.

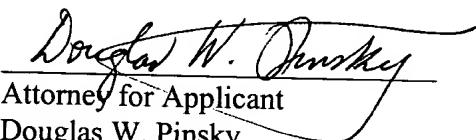
For the foregoing reasons, Applicant submits that the present invention, as recited in independent claim 1, is patentably defined over the cited art, whether that art is taken individually or in combination.

The dependent claims also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in independent claim 1. Further individual consideration of these dependent claims is requested.

Applicant further submits that the instant application is in condition for allowance. Favorable reconsideration, withdrawal of the rejections set forth in the above-noted Office Action and an early Notice of Allowance are requested.

Applicant's attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,



Attorney for Applicant
Douglas W. Pinsky
Registration No. 46,994

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200

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